

## THE LIFE-HISTORY OF ZANCLOGNATHA TARSIPENNALIS, TR.

By REV. DESMOND MURRAY.

Plate III.

13,820

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What are generally known as the "*Deltoides*" are a group of small dull-coloured moths, including the "Snouts" and "Fanfoots." The name was given from the figure made by the wings of the moth, when at rest, which closely resembles the Greek letter  $\Delta$  (Delta).

Though this same figure is to be noticed with other moths at rest, as with the *Hyberniae*, *aescularia*, *hispidaria*, etc., the name is confined to the ones mentioned.

Such names as Deltoid, Annulet, Chevron, and similar ones, which our nomenclature retains, can be said to be obsolete words of a long-forgotten past.

There are in all five "Fanfoots," i.e., *tarsipennalis*, *barbalis*, *grisealis*, *cribralis*, and *derivalis*, unless the almost unknown *emortualis*—the "Olive Crescent"—be included. The first-named is perhaps the most common and generally distributed species.

The popular name given to the "Snouts," on account of the elongate palpi, can be equally applied to the "Fanfoots." With these the palpi are sickle-shaped, turning upwards, but in addition they have an extraordinary "foot" or rather fore-leg, shown only in the male, that gives them their name. No very satisfactory explanation has so far been given for this appendage.

Judging from similar organs in other moths, it must be some kind of scent-organ, as a brush for the diffusion of scent. But why do these small moths possess such an organ and how does it function? Why is it not present in other similar moths? It was with this object in view, to find some solution to the problem, that some larvae of *tarsipennalis* were bred through from the egg and figures taken of all the stages.

Though no more definite conclusions were arrived at than that the organ must be used to help the sexes to find each other amongst the dense vegetation which they frequent, the details of the early stages may be interesting to others, who can perhaps record additional facts.

**THE EGG:**—The eggs are laid in June-July, singly or two or three together, scattered indiscriminately amongst leaves on the ground and on low plants under hedges. The egg is comparatively large for the size of the moth; white in colour, like a tiny dull pearl, touched a few days later with pink and appearing to be semi-transparent, in five or six days, when the larva emerges. The surface of the egg is marked with a very fine lace-work pattern, seen under a high-power objective.

**THE LARVA:**—On emergence the young larva measures less than 1 mm., dull white or flesh-coloured, armed with prominent setae. It grows rapidly feeding on various leaves supplied, going through four instars, as far as I could judge. By the end of August or into September it settles for hibernation. At this stage the larva is dull brown in colour dorsally, with darker spots, fleshy grey, ventrally; setae, short and stumpy; measurement, 6 mm. At first the larva is active enough but grows more sluggish to full growth, resting amongst curled-up dry leaves during the day, feeding occasionally during the night. By the middle of September the larva shows no movement, remaining stationary

during the next month. Some twisted dry leaves showed a slight web. From this time until March or April, when it appears to have shrunk, it remains motionless in hibernation, without any covering. This is one of the unusual habits of the larva uncommon with larvae above ground. The skin was shown to be very tough on dissection, being lined with a fatty substance. Such delicate larvae, however, as many of the *Geometrae* and even the *Pterophoridae* also remain above ground. Why do they not change when they have reached full growth and food is plentiful? Would excessive moisture be detrimental to the pupa stage? It is easy to ask these questions but not easy to answer them. Temperature does not explain hibernation.

**THE PUPA:**—After feeding again for a short period the larva settles for pupation during April or May, generally amongst the dry leaves with a very slight web. There is nothing peculiar about this stage, except the fine cremastral hooks.

**FOOD PLANTS:**—These consist of any leaves available: groundsel, sowthistle, lettuce, catkins, even apple rind. Withered leaves do not seem to be eaten, as stated by others; these are only used to hide in during the daytime.

**THE IMAGO:**—Measures usually about 30 mm., though it varies considerably in size. It is light brown in colour, with a darker line at the angle of the upper and lower wings. There is little to distinguish the moth from *barbalis*. On the fore-leg of the male there is a brush on the first joint and another more elaborate one on the second, consisting of long golden, clubbed setae, surrounded by shorter ones of rich brown. The foot-joint holds longish setae as well. If, as supposed, the hairs are scent brushes they may possibly scatter an attractive scent over the leaves and so enable the female to be more easily found, for it is the male which seeks the female, not *vice-versa*. Perhaps the thick damp herbage which they frequent necessitates such a device, yet many similar moths are not provided with it. The leg of the female, in comparison, is quite normal. The wing venation does not show any peculiarities and the frenulum is present.

Mr F. N. Pierce very kindly supplied me with mounts of the genitalia from which, and from my own, the drawing was made. Comparison with *barbalis* shows the costa with a pointed projection; in *tarsipennalis* it is blunt.

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#### EXPLANATION OF PLATE.

(a) Egg and surface pattern. (b) Larva—1st instar,  $\times 50$ . (c) Larva—head, full growth. (d) Larva—setal map, 7th seg. at last instar,  $\times 20$ . (e) Pupa,  $\times 2$ , and cremastral process. (f) Imago—head showing palpi and antenna. (g) Foreleg of ♀ and ♂, with single seta. (h) Wing venation. (j) Genitalia, ♂ and ♀,  $\times 25$ , with single valva of *barbalis*.

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#### EMERGENCES OF TRYPETIDAE.

By M. NIBLETT.

In the *Entomologist's Record*, March 1938, Mr H. W. Andrews detailed some experiences of his own, and of others, relating to varying times of emergence of several species of Trypetids. I have recently